

AB-34B - Symposium

Assessing Leadership at the Naval Academy with a Biographical Inventory

Lawrence J. Stricker and Donald A. Rock
Educational Testing Service

The aim of this study was to develop and validate a biographical inventory to measure personality traits predictive of leadership of U.S. Naval Academy applicants.

Biographical measures have distinct advantages over personality and interest inventories, and similar instruments. Biographical measures can capture directly the past behavior of a person, probably the best predictor of his or her future actions. And the measures can deal with facts about the person's life, not the introspections and subjective judgments that make up the content of personality inventories and the like. As a result, biographical measures are likely to be less prone to misinterpretation, resistance, and distortion. The minimization of these problems probably accounts for the substantial validity of biographical measures in predicting a wide range of socially important variables.

Recent reassessments of the empirical research on the personality correlates of leadership ability suggest that this ability can be successfully predicted. Consistent links appear to exist between personality traits and leadership. This reassessment calls into question the widely-held conclusion, stemming from influential reviews by Stogdill (1948) and Gibb (1954), that personality traits and other individual-difference variables do not distinguish leaders from followers, and that leadership is simply a function of the situation. This reappraisal of the work on leadership also raises the real possibility that a properly constructed biographical inventory, designed to measure relevant personality traits, may be able to assess leadership potential.

Method

19990423 033

Constructing the Inventory

The empirical research on the personality correlates of leadership was reviewed. Five personality traits that can be characterized as dominance, emotional stability, need for achievement, self-confidence, and sociability were identified as being more-or-less consistently related to leadership in the reviews. Biographical items were written to tap each of the five traits. The items had factual content, dealt with public behavior, and concerned behavior that is under the examinee's control and involve opportunities and resources available to virtually everyone.

A biographical inventory made up of the five tentative personality scales was group administered in July 1987, on the second day of Plebe Summer, to 642 entering midshipmen in the class of 1991 at the Naval Academy. These were all the midshipmen in one of the two battalions. (Plebe Summer is a seven-week bootcamp for the training and indoctrination of incoming midshipmen.) The midshipmen were instructed that the results would not become part of the midshipmen's official records.

The item analysis of the inventory was carried out for one subsample ($N = 233$), and the analysis of the inventory's validity was done for the other subsample ($N = 233$). The item analysis, modeled after the one used by Jackson (1970) in developing the Personality Research Form, was intended to maximize the convergent and discriminant validity of the scales. There were originally 42 to 62 items per scale; the final scales, after the item analysis, had 8 to 22 items.

Validity Analysis

The validity analysis was intended to assess the ability of the final forms of the personality scales to tap leadership as well as the personality traits that they were intended to measure. (It is conceivable that a scale may validly measure the intended trait but be unrelated to leadership, at least as it is manifested in the setting being studied.) The analysis was done for the random half of midshipmen ($N = 233$) not used in the item analysis.

Criteria. Peer ratings were the criteria for the personality traits and the primary criterion for leadership. All midshipmen in the starboard battalion were asked to rate themselves and the other members of their squad, at the end of the seven weeks of Plebe Summer, on the five personality traits plus leadership. The poles of the variables were defined, and an eight-point scale was used. The ratings were made anonymously and the midshipmen were assured that the ratings would be used for research purposes only. The median rating received by each midshipman was used.

Secondary leadership criteria were Professional Military Quality Point Rating (MQPR) for four years at the Naval Academy, rank and leadership position in the senior year (first class) at the Naval Academy, and recommendation for early promotion in four years after graduating from the Naval Academy and being commissioned as a naval officer.

MQPR is an average of grades for Military Performance, Conduct, Physical Education, and professional courses, cumulated over the four years at the Naval Academy, analogous to a four-year grade-point average.

Rank is the highest rank achieved in the senior year. These are standard Navy ranks, ranging from ensign (1) to captain (6). Ranks and associated positions are assigned by the Naval Academy officers in charge of the midshipmen (ranging from the commandant to company officers), with input from current midshipmen officers, on the basis of the midshipmen's leadership ability demonstrated during their career at the Naval Academy. Because the number of the high ranks and high level positions are limited, different assignments are made in the Fall and Spring semesters to increase the opportunities for midshipmen to fill these roles. Hence, a midshipmen may be a captain or brigade commander in the Fall semester and an ensign and legal officer in the Spring, and vice versa.

Leadership Position is the highest leadership position achieved in the senior year. These are standard military leadership positions, ranging from Squad Leader (2) to Brigade Commander (7). Midshipmen who had administrative positions (e.g., Legal Officer, Company Subcommander) were assigned scores of 1.

Early Promotion Recommendation is the proportion of times that midshipmen who graduated in 1991 and subsequently served as officers in the Navy were recommended for early promotion in routine officer fitness evaluations between June 1991 and December 1995. (Comparable data were unavailable for midshipmen who subsequently served in the Marine Corps or other services.) (Other relevant variables are available from the officer fitness evaluations, including recommendations for regular promotion and overall evaluations, but have little variation.)

Statistical analysis. The product-moment correlations between the personality scales, sex, ethnicity, and the criteria were computed, using a pair-wise missing data program. Both statistical and practical significance were used to evaluate the results. For statistical significance, the .05 level was used. One-tail tests were used for the correlations of the personality scales with peer ratings and the leadership criteria. For practical significance, the conventional "small" effect size was used: a zero-order correlation of .10 and a multiple correlation of .14 (Cohen, 1988).

Results and Discussion

The zero-order and multiple correlations of the personality scales with the criteria are reported in Table 1.

Table 1 - Correlations of Personality Scales with Criteria

	Personality Scale					
Criterion	Dominance	Emotional Stability	Need for Achievement	Self-Conf	Sociability	Five Scales
Dominance peer rating	.23*	-.11	.08	.10	.35*	--
Emotional stability peer rating	.01	.03	-.01	.14*	.13*	--
Need for achievement peer rating	.06	.04	.12*	.15*	.21*	--
Self-confidence peer rating	.13*	-.09	.03	.12*	.27*	--
Sociability peer rating	.20	-.19	.07	.03	.36*	--
Leadership peer rating	.06	-.06	.07	.09	.28*	.34*
MQPR	.13*	.04	.21*	.12	.20*	.31*
Rank	.18*	.16*	.22*	.02	.12	.29*
Leadership position	.08	.10	.05	.03	.17*	.21
Early promotion recommendation	.01	.02	.12	-.14	-.01	.18

Note. Ns vary from 223 to 143. Five Scales correlations are multiple correlations.

* $p < .05$, one-tail test.

Personality trait ratings. All of the scales, except Emotional Stability, had statistically and practically significant correlations with the corresponding peer ratings. The Sociability and Dominance scales correlated moderately ($r = .36, .23$) and the Need for Achievement and Self-Confidence scales correlated slightly ($r = .12, .12$), with the relevant ratings. However, the Self-Confidence scale correlated higher with irrelevant ratings (Need for Achievement, $r = .15$; and Emotional Stability, $r = .14$). This pattern of multitrait-multimethod correlations indicates that only the Sociability, Dominance, and Need for Achievement scales had some degree of both convergent and discriminant validity.

Leadership measures. The scales had scattered significant correlations with the leadership criteria. One scale, Sociability, and the five scales in combination correlated moderately ($r = .28, R = .34$) with the Leadership peer rating.

All of the scales, except Self-Confidence, correlated slightly or moderately with one or more of the Naval Academy criteria. The Need for Achievement and Sociability scales correlated moderately ($r = .21, .20$) and the Dominance scale correlated slightly ($r = .13$) with MQPR, and the five scales in combination correlated significantly but moderately ($R = .31$) with this criterion. The Need for Achievement scale correlated moderately ($r = .22$) and the Dominance and Emotional Stability scales correlated slightly ($r = .18$ and $.16$) with Rank; the five scales in combination correlated moderately ($R = .29$) with this criterion. And the Sociability scale correlated slightly ($r = .17$) with Leadership Position; the five scales in combination did not correlate significantly with the criterion.

None of the scales individually or in combination correlated significantly with Early Promotion Recommendation.

In short, all of the scales, except Self-Confidence, had some ability--often modest--to predict the leadership criteria. The Sociability scale displayed the most consistent validity, predicting three of the five criteria (Early Promotion Recommendation was not predicted by any scale).

Conclusions

Validity of Personality Scales

A key finding is that the Sociability scale, and to a lesser extent, all of the other

scales, except Self-Confidence, had some validity. The Sociability, Dominance, and Need for Achievement scales demonstrated convergent and discriminant validity in the analyses with peer ratings, and these three scales plus Emotional Stability correlated with the leadership criteria. However, the level of validity was often modest, particularly for the Dominance, Need for Achievement, and Emotional Stability scales. The failure of the Self-Confidence scale to show any sign of validity cannot be explained at this juncture.

The consistent relationships between the Sociability scale and several of the leadership criteria, including a nontrivial association ($r = .28$) with the primary criterion, the Leadership rating, suggests that this scale may be useful in assessing leadership potential. In interpreting the validity results, it must be borne in mind that the ratings and the leadership criteria were less than ideal. The ratings, including the primary leadership criterion, may have been affected by a halo factor. The secondary leadership criteria, MQPR, Rank, Leadership Position, and Early Promotion Recommendation, were obtained four to eight years after the biographical inventory was administered, this long time interval probably attenuating predictive validity. Furthermore, these secondary criteria may reflect things besides leadership, per se, such as general ability.

The present results, in total, offer no more than modest support for the proposition that personality traits are implicated in leadership. However, this conclusion needs to be qualified because of the limitations in the leadership criterion already noted and the real possibility that leadership is restricted in range in this sample because midshipmen are explicitly selected for their leadership potential, based on extracurricular activities, recommendations, and an interview with a Naval Academy alumnus. Whether the present conclusions are generalizable to other contexts in the Navy or elsewhere is uncertain.

Methodological Implications

The findings suggest that homogeneous scales, made up of biographical items that are factual and fair, can be constructed to assess specific traits. The same procedures for generating and analyzing items, adapted from those previously used in developing personality inventories, can readily be applied to the measurement of other kinds of individual-difference variables with biographical items. Similar methods for generating items for biographical measures have recently been proposed and tried out.

The item generation and analytical approach used in this study to developing biographical measures has important advantages. Concerns about unfairness and bias are minimized; the scores are interpretable and communicable; they are transportable, not being bound to a particular criterion; and scales can be constructed quickly and easily, with items being written to tap targeted constructs and with no need to defer scale construction until criterion data become available.

Work on biographical measures has long been criticized as atheoretical and mired in out-of-date methodology. This study and other recent research underscore the growing emphasis on the role of constructs in the development of these devices.

References

Gibb, C. A. (1954). Leadership. In G. Lindzey (Ed.). Handbook of social psychology (Vol.2, pp. 877-920). Cambridge, MA: Adison-Wesley.

Jackson, D. N. (1970). A sequential system for personality scale construction. Current topics in clinical and community psychology, 2, 61-96.

Stogdill, R. M. (1948). Personal factors associated with leadership: A survey of the literature. Journal of Psychology, 25, 35-71.

INTERNET DOCUMENT INFORMATION FORM

A . Report Title: Assessing Leadership at the Naval Academy with a Biographical Inventory

B. DATE Report Downloaded From the Internet 4/21/99

C. Report's Point of Contact: (Name, Organization, Address, Office Symbol, & Ph #): Navy Education and Training
Professional Development and
Technology Center
Navy Advancement Center Dept
Dr. Grover Diesel, (850) 452-1815
6490 Saufley Field Road
Pensacola, FL 32509-5237

D. Currently Applicable Classification Level: Unclassified

E. Distribution Statement A: Approved for Public Release

F. The foregoing information was compiled and provided by:
DTIC-OCA, Initials: VM_ **Preparation Date:** 4/22/99__

The foregoing information should exactly correspond to the Title, Report Number, and the Date on the accompanying report document. If there are mismatches, or other questions, contact the above OCA Representative for resolution.